COA

Carren Johnson

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ESP Associates, P.A.
engineering • surveying • planning

SEP 2003
Received
Solid Waste
Section

August 27, 2003

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SEP 23 2003
NC DEPT OF ENVIRONMENT AND NATURAL RESOURCES
MOORESVILLE REGIONAL OFFICE

BFI
5105 Morehead Road
Concord, North Carolina 28027

ATTENTION: Mr. Mike Gurley

Reference: **REPAIR OF 60-MIL HDPE LINER – INTERMEDIATE BERM**
CMS LANDFILL V, CELLS 2C – 2D
Concord, North Carolina

Mr. Gurley:

ESP Associates, P.A. (ESP) has completed the construction quality assurance (CQA) for a 60-mil HDPE liner repair located on the Cell 2C / Cell 2D intermediate berm approximately 35 feet north of the inside top crest of the perimeter containment berm. The damage and subsequent repair were both within the containment limits of Landfill V. The intermediate berm liner serves to segregate leachate from an active cell from stormwater from a non-active cell footprint and to segregate leachate between individual cells. The repair was made by GSE on August 15, 2003 under the full-time monitoring and inspection of ESP. The attached Figure 1 shows the location of the repair.

BFI personnel assisted GSE to appropriately expose the damaged liner area. GSE obtained textured 60-mil HDPE from surplus material left on-site from Cell 2L construction. The Cell 2C / Cell 2D intermediate berm liner is a 60-mil smooth HDPE with white surface. GSE prepared the area by drying and cleaning and cutting the damaged area from the liner. A patch measuring 4.5 feet X 6.5 feet was cut from the textured HDPE and heat bonded into place. The edges where the patch meets the parent 60-mil liner were ground in preparation to receive an extrusion weld.

Prior to extrusion welding the patch into place, a trial seam was performed by GSE personnel under the observation of ESP. Six 1-inch wide specimens were cut from the trial seam and tested in GSE's tensiometer for peel adhesion strength. All specimens failed in Film Tear Bond mode with strength values ranging from 150 to 119 pounds per inch. Therefore, the equipment and welding technician were accepted by ESP personnel.

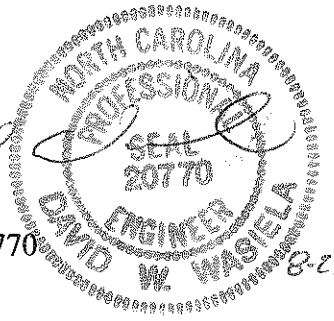
The patch was installed using extrusion welding techniques installing a HDPE resin bead at the intersection of the patch and underlying parent liner. Welding was performed under the

monitoring of ESP personnel. Following installation of the patch, the weld was vacuum box tested revealing no leaks.

If you should have any questions or require any additional information concerning this report or attachments, please contact me at (704) 504-1015.

Sincerely,

ESP Associates, P.A.



8-27-03

David W. Wasiela, P.E.
NC Registration No. 20770
Project Engineer

Attch: Figure 1 – Repair Location on Intermediate Berm

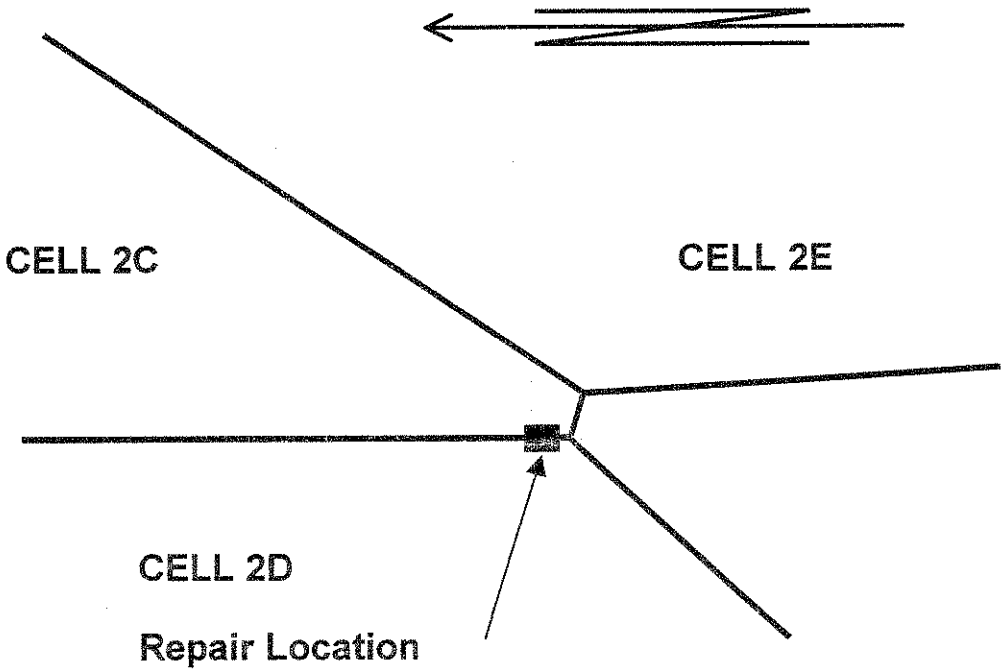


Figure 1 - Repair Location on Intermediate Berm